Health Diet Analyzer – Full Project Report
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Abstract
This project focuses on creating a simple and reliable Health Diet Analyzer that helps
users track their daily food intake and understand the nutritional breakdown of their meals. The
application is written in Java and uses JSON-based storage for nutritional data. The goal was
to build something practical, easy to use, and helpful for everyday food awareness.

## 1. Introduction
The motivation behind this project came from observing how hostel students often eat
without knowing the calorie or nutrition value of their meals. This results in unhealthy eating habits.
The project tries to solve this by providing a small tool that calculates calories, protein,
carbohydrates, and fats in a straightforward way.

## 2. Problem Statement
Many people want to eat healthy, but they do not have a convenient way to calculate what they
consume. Mobile apps exist, but they are either too complicated or require internet. A simple
local Java-based analyzer makes the task easier, especially for students.

## 3. Objectives
Allow users to enter food and quantity
Display calorie and nutritional totals
Use JSON to store structured nutritional data
Maintain clean and modular Java code
Provide extendable architecture for future GUI or REST API

## 4. Software Requirements
Java Development Kit (JDK 17 or higher)
Maven 3.6+
Jackson Databind for JSON parsing
JUnit for testing

## 5. Project Architecture
The system follows a modular architecture:
Model Layer: Contains POJO classes for food and nutrition.
Service Layer: Handles all calculations.
Data Layer: Loads JSON files and provides lookup functionality.
UI Layer: Console-based interaction with the user.

## 6. Use Case Diagram
User
■ Log Meal
■ View Summary
■ Get Recommendations

## 7. Sequence Diagram
User -> App: Enter Food
App -> Data: Fetch Nutrition
Data -> App: Return Values
App -> User: Display Summary

## 8. Implementation Summary
The code is divided into packages based on responsibility. JSON parsing is handled
through Jackson, ensuring reliable data loading. The console UI keeps the program simple. Maven
manages the build lifecycle, making the application easy to compile and package.

9. Sample Output
Food: Rice
Quantity: 1 bowl
Calories: 206 kcal
Protein: 4.3 g
Carbs: 45 g
Fats: 0.4 g

10. Testing
Basic tests were written to check JSON loading and nutritional calculations. These tests helped catch small logical issues early. Smoke tests ensure the application builds and runs without errors.

11. Future Enhancements
JavaFX GUI for better user experience
REST API version using Spring Boot
More detailed nutritional dataset
Daily history tracking and charts

12. Conclusion
The Health Diet Analyzer project provided a practical learning experience in Java development, modular design, JSON handling, and basic software engineering concepts. It can be extended easily and serves as a meaningful starting point for larger health-related applications.